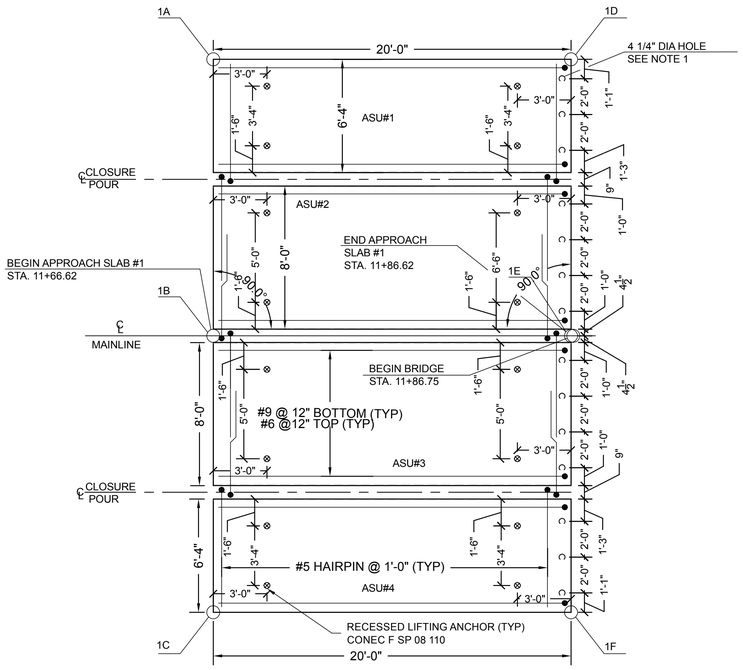
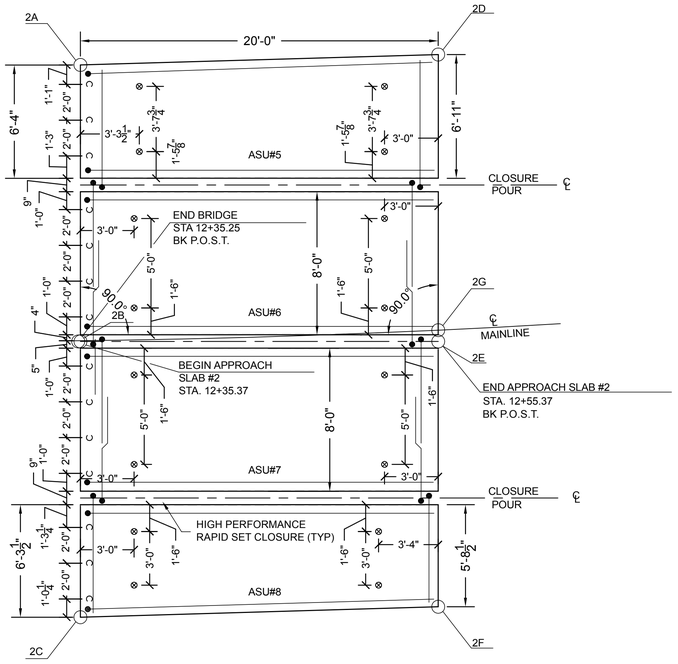


APPROACH SLAB #1 PLAN VIEW

NTS



APPROACH SLAB #2 PLAN VIEW

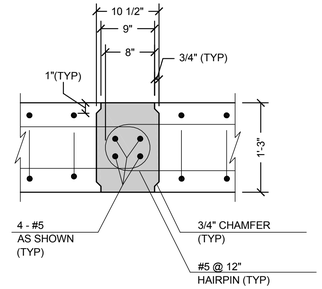
NTS

NOTE:
1. 4 1/4" DIA. HOLES ARE POVIDED IN THE APPROACH SLAB TO ALIGN TO THE #8 BARS DOWELS PROTRUDING FROM THE SLAB SEAT.

ASU = APPROACH SLAB UNIT

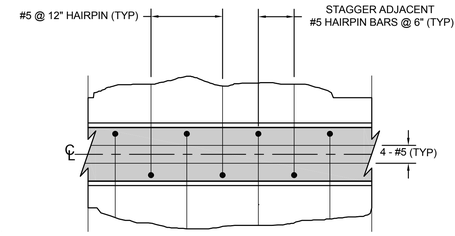
APPROACH SLAB WEIGHTS

ASU #1	24,000LBS
ASU #2	30,000LBS
ASU #3	30,000LBS
ASU #4	24,000LBS
ASU #5	25,000LBS
ASU #6	30,000LBS
ASU #7	30,000LBS
ASU #8	23,000LBS



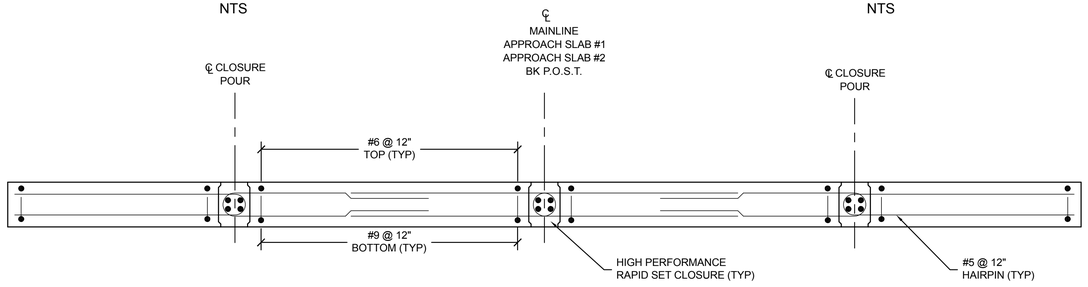
CLOSURE POUR DETAIL SECTION

NTS



CLOSURE POUR PLAN

NTS



TYPICAL SECTION

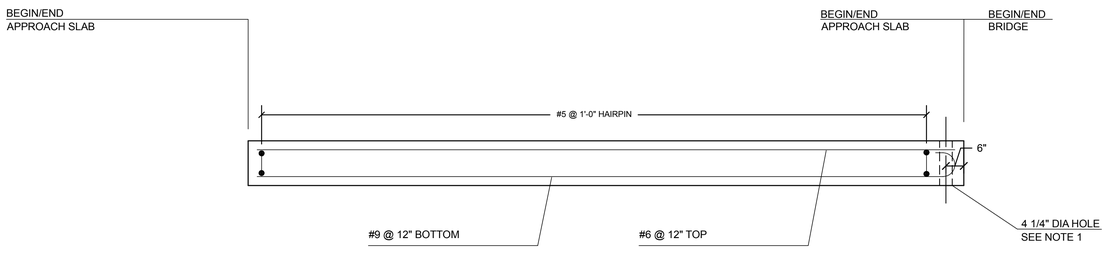
NTS

	STATION	OFFSET	ELEVATION
1A	11+66.62	-15.46	1069.10
1B	11+66.62	℄	1069.41
1C	11+66.62	15.46	1069.72
1D	11+86.62	-15.46	1068.83
1E	11+86.62	℄	1069.14
1F	11+86.62	15.46	1069.45
2A	12+35.57	-15.42	1068.16
2B	12+35.37	℄	1068.47
2C	12+35.19	15.46	1068.78
2D	12+56.13	-15.39	1067.88
2E	12+55.39	℄	1068.20
2F	12+54.68	15.45	1068.52
2G	12+55.37	0.63	1068.51

APPROACH SLAB ELEVATIONS

ALL ELEVATIONS ARE TOP OF SLAB

NOTE:
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-7" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.



APPROACH SLAB ELEVATION VIEW

NTS

STATE OF VERMONT
RONALD K. BELL
No. 6894
REGISTERED
PROFESSIONAL ENGINEER

REV. NO.	DATE:

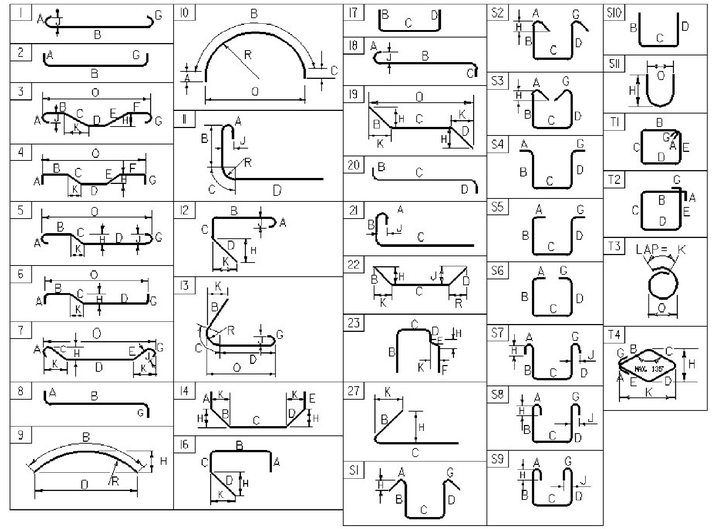
RENAUD BROS. INC.
283 FT. BRIDGEMAN RD. VERNON VT., 05354
PH. (802) 257-7583 FAX: (802) 257-7508

SHEET NAME: APPROACH SLAB PLANS
PROJECT NAME: ANDOVER
PROJECT NO: BHF 016-1 (29)
DRAWN BY: CE
CHK'D BY:
DATE: 05/08/2015
SHEET NO. 1 OF 5

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	ASU #1																
	8	9	20'- 6"	1AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	1AP601	STR	19'- 6"											
	4	6	3'- 7"	1AP602	4	-- --	1'- 1"	0'- 8"	-- --	0'- 8"	1'- 1"	-- --	0'- 6"				
	4	5	19'- 6"	1AP501	STR	19'- 6"											
	21	5	13'- 10"	1AP503	S11								6'- 9"				0'- 7"
	ASU #2																
	8	9	20'- 6"	1AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	1AP601	STR	19'- 6"											
	4	6	3'- 7"	1AP602	4	-- --	1'- 1"	0'- 8"	-- --	0'- 8"	1'- 1"	-- --	0'- 6"				
	4	5	19'- 6"	1AP501	STR	19'- 6"											
	42	5	12'- 3"	1AP502	S11								5'- 11"				0'- 7"
	ASU #3																
	8	9	20'- 6"	1AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	1AP601	STR	19'- 6"											
	4	6	3'- 7"	1AP602	4	-- --	1'- 1"	0'- 8"	-- --	0'- 8"	1'- 1"	-- --	0'- 6"				
	4	5	19'- 6"	1AP501	STR	19'- 6"											
	42	5	12'- 3"	1AP502	S11								5'- 11"				0'- 7"
	ASU #4																
	8	9	20'- 6"	1AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	1AP601	STR	19'- 6"											
	4	6	3'- 7"	1AP602	4	-- --	1'- 1"	0'- 8"	-- --	0'- 8"	1'- 1"	-- --	0'- 6"				
	21	5	13'- 10"	1AP503	S11								6'- 9"				0'- 7"
	ASU #5																
	8	9	20'- 5"	2AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 5"	2AP601	STR	19'- 6"											
	4	6	3'- 6"	1AP602	4	-- --	1'- 1"	0'- 8"	-- --	0'- 8"	1'- 1"	-- --	0'- 6"				
	4	5	19'- 5"	2AP501	STR	19'- 6"											
	2	5	15'- 1"	2AP511	S11								7'- 4"				0'- 7"
	2	5	14'- 11"	2AP512	S11								7'- 3"				0'- 7"
	2	5	14'- 10"	2AP513	S11								7'- 3"				0'- 7"
	2	5	14'- 8"	2AP514	S11								7'- 2"				0'- 7"
	2	5	14'- 7"	2AP515	S11								7'- 1"				0'- 7"
	2	5	14'- 5"	2AP516	S11								7'- 0"				0'- 7"
	2	5	14'- 4"	2AP517	S11								7'- 0"				0'- 7"
	2	5	14'- 2"	2AP518	S11								6'- 11"				0'- 7"
	2	5	14'- 1"	2AP519	S11								6'- 10"				0'- 7"
	2	5	13'- 11"	2AP520	S11								6'- 9"				0'- 7"
	2	5	13'- 10"	2AP521	S11								6'- 9"				0'- 7"
	ASU #6																
	8	9	20'- 6"	2AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	2AP601	STR	19'- 6"											
	4	6	3'- 7"	1AP602	4	-- --	1'- 1"	0'- 8"	-- --	0'- 8"	1'- 1"	-- --	0'- 6"				
	4	5	19'- 6"	2AP501	STR	19'- 6"											
	42	5	12'- 3"	2AP502	S11								5'- 11"				0'- 7"
	ASU #7																
	8	9	20'- 6"	2AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	2AP601	STR	19'- 6"											
	4	6	3'- 7"	1AP602	4	-- --	1'- 1"	0'- 8"	-- --	0'- 8"	1'- 1"	-- --	0'- 6"				
	4	5	19'- 6"	2AP501	STR	19'- 6"											
	42	5	12'- 3"	2AP502	S11								5'- 11"				0'- 7"
	ASU #8																
	8	9	20'- 6"	2AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	2AP601	STR	19'- 6"											
	4	6	3'- 7"	1AP602	4	-- --	1'- 1"	0'- 8"	-- --	0'- 8"	1'- 1"	-- --	0'- 6"				
	2	5	13'- 9"-	2AP501	S11								6'- 8"				0'- 7"
	2	5	13'- 8"	2AP501	S11								6'- 8"				0'- 7"
	2	5	13'- 6"	2AP501	S11								6'- 7"				0'- 7"
	2	5	13'- 5"	2AP502	S11								6'- 6"				0'- 7"
	2	5	13'- 4"	2AP503	S11								6'- 6"				0'- 7"
	2	5	13'- 2"	2AP504	S11								6'- 5"				0'- 7"
	2	5	13'- 1"	2AP506	S11								6'- 4"				0'- 7"
	2	5	12'- 11"	2AP507	S11								6'- 3"				0'- 7"
	2	5	12'- 10"	2AP508	S11								6'- 3"				0'- 7"
	2	5	12'- 8"	2AP509	S11								6'- 2"				0'- 7"
	2	5	12'- 7"	2AP510	S11								6'- 1"				0'- 7"

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS *TO BE CUT IN FIELD*.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. .3 IN BAR MARK SUFFIX DENOTES LEVEL III REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION DIAMETER INCHES	AREA INCHES ^{2}	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

REINFORCING SCHEDULE

REV. NO.	DATE:

RENAUD BROS. INC.
283 FT. BRIDGEMAN RD. VERNON VT., 05354
PH. (802) 257-7583 FAX.(802) 257-7308

SHEET NAME: APPROACH SLAB PLANS

PROJECT NAME: ANDOVER

PROJECT NO: BHF 016-1 (29)

DRAWN BY: CE | CHK'D BY: | DATE: 05/08/2015

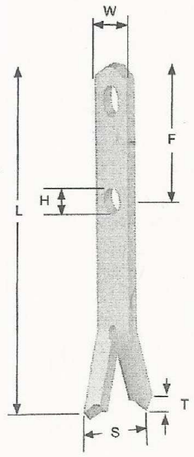
SHEET NO. 2 OF 5

FLAT STEEL

CONAC
Concrete Product Solutions

SPREAD ANCHOR

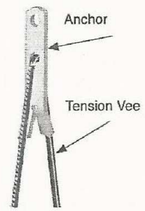
Used for both stripping and erecting. With proper edge distances can be pulled in any direction.



TON	SYS CODE	PART NUMBER	BODY LENGTH (L)	BODY WIDTH (W)	BODY THICK. (T)	BASE SPREAD (S)	HOLE LOCA. (F)	HOLE DIA. (H)	SWL TENSION (LBS)	UML TENSION (LBS)
2	2.5	F SP 02 048	4-3/4"	1-1/4"	3/16"	2-3/4"	None	None	2000	8000
2	2.5	F SP 02 040	4"	1-1/4"	3/8"	2-3/4"	None	None	2530	16000
2	2.5	F SP 02 055	5-1/2"	1-1/4"	3/8"	2-3/4"	None	None	4000	16000
4	5	F SP 04 040	4"	1-1/2"	1/2"	3-3/8"	None	None	2670	24000
4	5	F SP 04048	4-3/4"	1-1/2"	1/2"	3-3/8"	3-3/4"	7/8"	3590	24000
4	5	F SP 04 068	6-3/4"	1-1/2"	1/2"	3-3/8"	3-3/4"	7/8"	4960	32000
4	5	F SP 04 063	6-1/4"	1-1/2"	5/8"	3-3/8"	3-3/4"	11/16"	5850	32000
4	5	F SP 04 095	9-1/2"	1-1/2"	5/8"	3-3/8"	3-3/4"	11/16"	8000	32000
6	10	F SP 06 110	11"	2-1/2"	5/8"	5-1/4"	5"	1"	12000	48000
8	10	F SP 08 110	11"	2-1/2"	3/4"	5-1/4"	5"	1"	16000	64000
22	22	F SP 22 150	15"	3-1/8"	3/4"	6-1/4"	9"	1-3/8"	32800	136000
22	22	F SP 22 189	18-7/8"	3-1/8"	1"	6-1/4"	13"	1-3/8"	44000	176000

UML= Ultimate Mechanical Load in tension

Safe working loads based on 4:1 Safety Factor in 3,500 psi normal weight concrete.



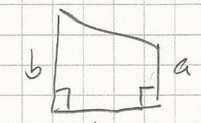
TENSION VEES	REQUIRED TO DEVELOPE REINFORCED ALLOWABLE TENSION CAPACITY					
		Concrete Strength [psi]				
Nominal System Capacity	Rebar Size	2,000	3,000	4,000	5,000	6,000
		Length of rebar before bending [in]				
2 Ton	#3	31	25	22	19	18
4 Ton	#4	41	33	29	26	24
6 Ton	#5	51	42	36	32	29
8 Ton	#6	61	50	43	39	35
22 Ton	#9	114	93	81	72	66

USE #6 BAR AND BEND AS NECESSARY TO MAINTAIN 3" MIN AT BOTTOM OF SLAB

BELL ENGINEERING
CIVIL & ENVIRONMENTAL
17 ECHO COVE WAY
SPOFFORD, NEW HAMPSHIRE 03462
(603) 363-9966

PROJECT NAME/ LOCATION: ANDOVER BHF 016-1(29)
SHEET #: 1 OF 1
CALCULATED BY: RON BELL DATE: 4-26-2015
CHECKED BY: DATE:
SCALE:

APPROACH SLABS: CALCULATE CENTROIDS OF TRAPEZOIDAL SLABS TO LOCATE LIFTING HOOK LOCATIONS:



$A = \frac{h}{2}(a+b)$

$A\bar{y} = \int_0^h \frac{1}{2}s^2(x)\,dx$

$= \frac{h}{6}(b^2+ba+a^2)$

$\bar{y} = \frac{\frac{h}{6}(b^2+ba+a^2)}{\frac{h}{2}(a+b)}$

$A\bar{x} = \int_0^h x f(x)\,dx$

$= \frac{h^2}{6}(2a+b)$

$\bar{x} = \frac{\frac{h^2}{6}(2a+b)}{\frac{h}{2}(a+b)}$

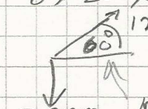
ASU #5 CENTROID = 9.853, 3.315

ASU #8 CENTROID = 9.838, 3.002

LIFTING HOOK LOCATIONS TO HAVE SAME RADIUS DIMENSION FROM CENTROID WITH EQUAL ANGLES ABOUT X-Y AXIS

FOR LARGEST SLAB 8' x 20' x 1.25' x 150 pcf = 30,000#

30,000# / 4 HOOK = 7,500



∴ USE 8 TON ANCHOR

MIN. ALLOWABLE RIGGING ANGLE

SHEET NAME: APPROACH SLAB PLANS

REV. NO.	DATE:

RENAUD BROS. INC.
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PH. (802) 257-7583 FAX: (802) 257-7308

PROJECT NAME: ANDOVER
PROJECT NO: BHF 016-1 (29)
DRAWN BY: CE
CHK'D BY:
DATE: 05/08/2015
SHEET NO. 3 OF 5

BELL ENGINEERING
CIVIL & ENVIRONMENTAL
17 ECHO COVE WAY
SPOFFORD, NEW HAMPSHIRE 03462
(603) 363-9966

PROJECT NAME/ LOCATION: ANDOVER BHF 06-1 (29)
SHEET #: 1 OF 5
CALCULATED BY: RON BELL DATE: 5-06-2015
CHECKED BY: DATE:
SCALE:

CHECK IF THERE IS SUFFICIENT REINFORCEMENT IN SLABS TO RESIST MOMENTS + SHEARS WHEN LIFTING SLABS FROM PROPOSED LIFTING POINTS

WORST CASE IS 8'x20' SLAB

PROPOSED LIFT POINTS: 1.5' FROM SIDES
4 POINTS 3.0' FROM ENDS

FACTORED GRAVITY LOADS:

$q_u = 1.2\ WD$

$= (1.2)(15/12)(150)$

$= 225\ lb/ft^2$

FROM ACI DIRECT DESIGN METHOD

ACI EQ. 13-21 GIVES STATIC MOMENT FOR A PANEL AS

$M_o = \frac{q_u l_2 l_n^2}{8}$

l_2 = ⊥ to long span between supports

l_n = longitudinal length between supports

$= \frac{\left(225\ \frac{lb}{ft^2}\right)\left(\frac{1\ kip}{1000\ lb}\right)(5ft)(14ft)^2}{8}$

$= 27.56\ KIP\text{-}FT$

STATE OF VERMONT RONALD K. BELL No. 6934 REGISTERED PROFESSIONAL ENGINEER

BELL ENGINEERING
CIVIL & ENVIRONMENTAL
17 ECHO COVE WAY
SPOFFORD, NEW HAMPSHIRE 03462
(603) 363-9966

PROJECT NAME/ LOCATION: ANDOVER BHF 06-1 (29)
SHEET #: 2 OF
CALCULATED BY: RON BELL DATE: 5-6-2015
CHECKED BY: DATE:
SCALE:

FROM ACI 13.6.3 THE TOTAL POSITIVE MOMENT ACROSS THE PANEL IS:

$M_m = 0.35\ M_o$

$= 9.646\ KIP\text{-}FT$

FROM ACI 13.6.4 the Column Strip (i.e. pick point strip) positive moment is

$M_{cm} = 0.60\ M_m$

$= 5.788\ KIP\text{-}FT$ (CONTROLS)

FROM ACI 13.6.6 THE MIDDLE STRIP POSITIVE MOMENT IS:

$M_{MN} = M_m - M_{cm}$

$= 3.858\ FT\text{-}KIP$

FROM ACI 13.6.3 THE TOTAL NEGATIVE MOMENT IS: $M_c = 0.65\ M_o$

$= 17.914\ FT\text{-}KIP$

FROM 13.6.4 THE NEGATIVE MOMENT AT THE SUPPORT (I.E. PICK POINT)

$= 0.75\ M_c$

$= 13.43$ (CONTROLS)

STATE OF VERMONT RONALD K. BELL No. 6934 REGISTERED PROFESSIONAL ENGINEER

Ronald K. Bell

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17 ECHO COVE WAY
SPOFFORD, NEW HAMPSHIRE 03462
(603) 363-9966

PROJECT NAME/ LOCATION: ANDOVER BHF 06-01-(29)
SHEET #: 3 OF 5
CALCULATED BY: RON BELL DATE: 5-6-2015
CHECKED BY: DATE:
SCALE:

FROM 13.6.6 THE NEGATIVE MOMENT IN THE MIDDLE STRIP IS

$M_{mc} = M_c - M_{cc}$

$= 4.479\ KIP\text{-}FT$

THE NOMINAL RESISTANCE IS CALCULATED: $M_N = A_s f_y d\left(1 - \frac{0.59 A_s f_y}{b w d f'_c}\right)$

FOR THE POSITIVE MOMENT:

$A_s = \#9\ Bars\ @\ 12"\ o.c. = 1.00\ in^2$

$d = 13"$

$M_n = (1.0)\left(60\ \frac{KIP}{ft}\right)(13\ in) \times \left(1 - \frac{(0.59)(1.00\ in^2)\left(60\ \frac{KIPS}{in^2}\right)}{(12\ in)(13\ in)(4\ KIPS/IN^2)}\right) \Big/ 12\ \frac{IN}{FT}$

$= 61.313\ KIPS\text{-}FT$

$61.313 >>> 5.788$ OK

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PROJECT NAME/ LOCATION: ANDOVER BHF 06-1 (29)
SHEET #: 4 OF 5
CALCULATED BY: RON BELL DATE: 5-06-2015
CHECKED BY: DATE:
SCALE:

FOR THE NEGATIVE MOMENT;

$A_s = \#7\ bars\ @\ 12"\ o.c. = 0.60\ in^2$

$d = 14"$

$M_n = \frac{(0.60)(60)(14) \times \left(1 - \frac{(0.59)(0.60)(60)}{(12)(14)(4)}\right)}{12}$

$= 40.673$

$40.673 >>> 13.43$ OK

CHEK IF SHEAR STRENGTH OK

THE FACTORED LOAD FROM PREVIOUS = $225\ lb/ft^2$

IN WIDE BEAM SHEAR, THE ENTIRE WIDTH OF A CRITICAL SECTION - TAKEN AT A DISTANCE d FROM THE FACE OF SUPPORT GIVES A DESIGN RESISTANCE OF:

$V_u = q_u l_2 \left(\frac{l_n}{2} - d\right)$

$= 225\ \frac{lb}{ft^2}\ (5ft)\left(\frac{14ft}{2} - \frac{15"}{12}\right)$

$= 6468.75\ lbs$

STATE OF VERMONT RONALD K. BELL No. 6934 REGISTERED PROFESSIONAL ENGINEER

BELL ENGINEERING
CIVIL & ENVIRONMENTAL
17 ECHO COVE WAY
SPOFFORD, NEW HAMPSHIRE 03462
(603) 363-9966

PROJECT NAME/ LOCATION: ANDOVER BHF 06-1 (29)
SHEET #: 5 OF 5
CALCULATED BY: RON BELL DATE: 5-6-2015
CHECKED BY: DATE:
SCALE:

$\phi V_c = 2\phi\sqrt{f'_c}\ Bd$

$= (2)(0.75)\sqrt{4000\ lb/in^2}\ (5ft)$

$(12\ in/ft)(15\ in)$

$= 85,381.49$ #S

$85,381.49\ lbs >>> 76,468.75\ lbs$ OK

STATE OF VERMONT RONALD K. BELL No. 6934 REGISTERED PROFESSIONAL ENGINEER

RENAUD BROS., INC.
CONCRETE PRE-PLACEMENT INSPECTION

PRE-INSPECTION
Inspector: _____ Date: _____
Concrete Supplier: _____ Mix Design: _____
Item Placing: _____ Date on Forming and Reinforcing Drawings: _____

FORMS
Form Condition: _____
Form Cleanliness: _____
Form Joints: _____ End and Edge Details: _____
Adaquate Ties: _____
Squareness: _____
Design Depth (ft/in): _____ Set-Up Depth (ft/in): _____
Design Length (ft/in): _____ Set-Up Length (ft/in): _____
Design Width (ft/in): _____ Set-Up Width (ft/in): _____
Release Agent/Retarder: _____

REINFORCING STEEL
Reinforcing Cleanliness: _____
Reinforcing Type: _____
Size of Reinforcing: _____
Spacing of Reinforcing: _____

Lifting Devices
Blockouts: _____
Plates and Inserts: _____

Finish _____

REMARKS: _____

REV. NO.	DATE:

RENAUD BROS. INC.
283 FT. BRIDGEMAN RD. VERNON VT., 05354
PH. (802) 257-7585 FAX.(802) 257-7308

SHEET NAME: APPROACH SLAB PLANS
PROJECT NAME: ANDOVER
PROJECT NO: BHF 016-1 (29)
DRAWN BY: CE
CHK'D BY:
DATE: 05/08/2015
SHEET NO. 4 OF 5

ANDOVER BHF 016-1 (29) - CONTRACTOR FABRICATED APPROACH SLABS QUALITY CONTROL PLAN

THE QUALITY CONTROL MANAGER FOR THIS PROJECT IS MIKE RENAUD. HE WILL BE CHECKING THE FORMS, REINFORCING, CONCRETE PLACEMENT, CURING, STORAGE, TRANSPORTATION, FINAL SETTING, AND JOINING IN THE FIELD. THE USE OF SUPPLIERS AND EMPLOYEES TO ASSIST IN THE PERFORMANCE OF THE WORK WILL BE NECESSARY. RENAUD BROTHERS HAS BEEN PLACING CONCRETE FOR VERMONT AGENCY OF TRANSPORTATION WITH SUCCESS FOR OVER TEN YEARS. DUE TO THE LIMITED SPACE OF RENAUD BROTHERS CASTING BEDS ONLY TWO UNITS WILL BE CAST AT ONE TIME.

CARROLL CONCRETE WILL BE RESPONSIBLE FOR SUPPLYING THE HIGH PERFORMANCE CLASS B CONCRETE MIX DESIGN AND THE QUALITY CONTROL TESTING FOR IT. THE ONSITE TECHNICAN WILL PERFORM AND REPORT ALL QUALITY CONTROL TESTING AND TAKE NECESSARY CYLINDERS FOR THE SUPPLIERS USE. THE QUALITY CONTROL TECHNICIAN WILL MONITOR THE CONCRETE FROM ITS RAW MATERIAL STATE TO IT'S PLACEMENT IN THE FORMS. THE QUALITY CONTROL TECHNICIAN WILL COMMUNICATE ANY POBLEMS OR ADJUSTMENTS WITH THE CONCRETE MIX TO RENAUD BROTHERS AND THE RESIDENT ENGINEER.

A PRE-PRODUCTION METING WILL BE SCHEDULED UPON ACEPTANCE OF THIS SUBMITTAL WHERE VERMONT AGENCY OF TRANSPORTATION WILL PERFORM THERE INITIAL QUALITY ASSURANCE CHECKS. THE ATTACHED INSPECTION FORM WILL BE UTILIZED BY RENAUD BROTHRS FOR THE MEETING. THE CONCRETE PLACEMENT WILL BE SCHEDULED FOR THE FOLLOWING DAY AT A TIME ESTABLISHED AT THE PRE-PRODUCTION MEETING. DURING EACH PLACEMENT VERMONT AGENCY OF TRANSPORTATION WILL HAVE THE OPORTUNITY TO PERFORM THEIR CONCRETE QUALITY CONTROL TESTING.

THE FORMOK WILL BE INSPECTED PRIOR TO INITIAL FORMING FOR CLEANLINESS AND FLATNESS. ONCE ERECTED THE DIMENSIONS WILL BE CHECKED FOR COMPLIANCE. JUST BEFORE REINFORCING IS INSTALLED A RELEASE AGENT WILL BE APPLIED TO THE FORMS.

THE REINFORCING STEEL WILL BE CHECKED FOR PROPER DIMENSIONS, AND CONFIGURATION PRIOR TO PLACEMENT IN THE FORMS. IF ANY REINFORCING IS FOUND TO BE OUT OF COMPLIANCE IT WILL BE REMOVED FROM THE WORK LOCATION AND REPLACED WITH NEW REINFORCING. THE REINFORCING WILL BE INSTALLED WITH THE TOLERENCE OF 1/4" +- ON PLACEMENT AND 1/4" +- ON CLEAR COVER AND CLEARENCE TO AN EXTERIOR EDGE.

THE LIFTING ANCHORS WILL BE PLACED IN THE SLABS DURING THE REINFORCING PHASE. THE ANCHORS WILL BE CHECKED FOR LOCATION AND HEIGHT COMPARED TO THE SURFACE OF THE SLAB. THE ANCHORS SPECIFIED WILL BE THE ANCHORS USED.

ONCE ALL CHECKS HAVE BEEN MADE AND RENAUD BROTHERS HAS PERMISSION TO PLACE THE CONCRETE WILL BE BATCHED AND PLACED. THERE WILL BE INDIVIDUALS DEDICATED TO EACH TASK OF THE PLACEMENT ie VIBRATOR, SCREED OPERATOR, RAKERS, AND FINISHERS. THE SURFACE FINISH FOR THE APPROACH SLABS WILL BE A MAG FLOAT FINISH OBTAINED BY USE OF MAG FLOATS AND A BULL FLOAT. A TAG WITH THE PIECE MARK AND DATE CAST WILL BE ATTACHED TO THE SLABS.

WET BURLAP AND CLEAR PLASTIC SHEETING WILL BE PLACED ON THE SLABS WHEN THEY HAVE CURED ENOUGH SO PLACEMENT WILL NOT DAMAGE THEM. THE SLABS WILL BE WET CURED FOR TEN DAYS.

AFTER FOUR DAYS THE FIRST SET OF CYLINDERS WILL BE TESTED. IF THE TESTING YEILDS 85% OF DESIGN STRENGTH THE FORMS WILL BE STRIPED AND THE SLABS WILL BE MOVED TO THE FINAL CURING LOCATION. THE SLABS WILL REST ON WOOD SUPPORTS SPACED FIVE FEET APART UNTIL TRANSPORT.

BEFORE THE SLABS ARE LOADED FOR TRANSPORT THEY SHALL BE CHECKED BY RENAUD BROTHERS AND VERMONT AGENCY OF TRANSPORTATION FOR CONFORMANCE. THE TOLERENCES ON THE FINAL SIZING COMPARED TO THE DESIGN SIZE ARE AS FOLLOWS: 1/4"+- LENGTH AND WIDTH AND 1/2"+- ON SQUARENESSS. ALL CONNECTING KEYWAYS WILL BE SAND BLASTED AND AIR BLASTED PRIOR TO SETTING AND CLOSURE PLACEMENT. ANY HOLES, HONEYCOMBING OR SPALLS WHICH ARE BIGGER THEN 5/8" AND 6 INCH OR LESS IN DIAMETER AND PENETRATE A 1/4 INCH BUT NO DEEPER THAN 1 INCH INTO THE CONCRETE WILL BE REPAIRED. ANY DEFECTS LARGER THEN 6 INCHES WILL BE CAUSE FOR REJECTION. ANY CRACKING WILL BE EVALUATED AND REPAIRED IF NECCESSARY. ALL REPAIR MATERIAL WILL BE PRE-APPROVED OVERHEAD AND VERTICAL CONCRETE REPAIR.

THE PIECES WILL BE SUPPORTED DURING TRANSPORT ON WOOD EVERY FIVE FEET OR CONTIUOUSLY BY THE TRAILER DECK. RUBBER MATS MAY BE USED BETWEEN THE SLABS AND TRAILER DECK. THE PIECES WILL BE SECURED TO THE TRAILER WITH EVENNLY SPACED ROAD WORTHY NYLON STRAPS OR PROTECTED CHAINS. THE SLABS WILL BE INSPECTED ONCE MORE UPON ARIVAL AT THE SITE FOR CHIPS AND CRACKING.

AFTER THE SUBGRADE HAS BEEN PREPARED TO THE APROPRIATE GRADE AND COMPACTION THE SLABS WILL BE SET TO THEIR FINAL LOCATION. THE CLOSURE POUR LONGITUDINAL REINFORCEMENT WILL BE INSTALLED AND THE HIGH PERFORMANCE RAPID SET WILL BE PLACED IN THE CLOSURE VOIDS.

STATE OF VERMONT
RONALD K. REED
No. 6894
REGISTERED
PROFESSIONAL ENGINEER

Ronald K. Reed

REV. NO.	DATE:

RENAUD BROS. INC.
283 FT. BRIDGEMAN RD. VERNON VT., 05354
PH. (802) 257-7583 FAX. (802) 257-7308

SHEET NAME: APPROACH SLAB PLANS

PROJECT NAME: ANDOVER

PROJECT NO: BHF 016-1 (29)

DRAWN BY:	CHK'D BY:	DATE:
CE		05/08/2015

SHEET NO. 5 OF 5

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIAL AND RESEARCH SECTION - STRUCTURAL CONCRETE UNIT

STRUCTURAL CONCRETE MIX DESIGN SUBMISSION

Agency Use Only	
Mix ID	HP15-B-050
Mix Design #	050
Approved by	jwild
Approved Date	5/4/2015
Spec Book Year	2011

Concrete class: HPC B
Additional Description:
Ready Mix Supplier: CARROLL CONCRETE - BRATTLEBORO, VT
Designed By: Scott Jordan
Design strength: 3500 PSI
Mix Design Style: Conventional
Agg weight - SSD or Dry: SSD

Mix designs are valid for a 12 month period from date of approval or unless there is a change in material, material property or design parameter.

Cement: 701.02	Source:		Specific Gravity			lb/cy	0.00 cf
	Brand Name:						
Cement Type III: 701.04	Source:		Specific Gravity			lb/cy	0.00 cf
	Brand Name:						
Blended Cement: 701.06	Source:	LAFARGE - TERCEM - MONTREAL, EAST PLANT	Specific Gravity	2.980	564	lb/cy	3.03 cf
	Brand Name:						
Cement with Slag: 701.07	Source:		Specific Gravity			lb/cy	0.00 cf
	Brand Name:						
Pozzolan: 725.03(a)	Source:		Specific Gravity			lb/cy	0.00 cf
	Brand Name:						
Fly Ash: 725.03(a)	Source:		Specific Gravity			lb/cy	0.00 cf
	Brand Name:						
Silica Fume: 725.03(b)	Source:		Specific Gravity			lb/cy	0.00 cf
	Brand Name:						
Slag: 725.03(c)	Source:		Specific Gravity			lb/cy	0.00 cf
	Brand Name:						
Water					29 gals	242 lb/cy	3.88 cf
Air Content Target					7.0 %		1.89 cf
Coarse Aggregate 3/8" 704.02A	Source:	Absorption	Specific Gravity			lb/cy	0.00 cf
Coarse Aggregate 3/4" 704.02B	Source:	LANE CONST INC PIT - NORTHFIELD, MA Absorption 1.00	Specific Gravity	2.670	1078	lb/cy	6.47 cf
Coarse Aggregate 1 1/2" 704.02C	Source:	COLD RIVER MATERIALS PIT - N WALPOLE, NH Absorption 0.60	Specific Gravity	2.870	718	lb/cy	4.01 cf
Fine Aggregate: 704.01	Source:	LANE CONST INC PIT - NORTHFIELD, MA Absorption 1.20	Specific Gravity	2.690	1296	lb/cy	7.72 cf
			Fineness Modulus	2.77			
Air Entrainment Admixture 725.02(b)	Source:	MASTER BUILDERS INC - MESQUITE, TX	Specific Gravity		1.5	oz/cy	
	Brand Name:	MasterAir AE200					
Retarder Admixture: 725.02(c)	Source:	MASTER BUILDERS INC - MESQUITE, TX	Specific Gravity		1	oz/cwt	
	Brand Name:	MasterSet R100					
High Range Water Reducer Admixture: 725.02(h)	Source:	MASTER BUILDERS INC - MESQUITE, TX	Specific Gravity		3	oz/cwt	
	Brand Name:	MasterGlenium 7500					
Other Admixtures:							
	Source:		Specific Gravity				0.00 cf
	Brand Name:						
	Source:		Specific Gravity				0.00 cf
	Brand Name:						
	Source:		Specific Gravity				0.00 cf
	Brand Name:						
			TOTAL	47.210	3898	lb	27.00 cf

Maximum Water/Cementitious Ratio: 0.49
Maximum Water (gal/cy): 33.1
Slump Min/Max (inch): 4.0 min 7.0 max
Air Content Min/Max (%): 5.5 min 8.5 max
Design Unit Wt. (lb/cf): 144.37

Approved by Jason Wild, VAOT Composite materials Engineer 5/4/15

Notes: Slump will be ignored for jobs with provisions to eliminate slump

2015 construction season, 5-1-15